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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/915,963	07/26/2001	George Earl Peterson	18	8322

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EXAMINER	
CHEN, SHIH CHAO	

ART UNIT	PAPER NUMBER
2821	

DATE MAILED: 11/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/915,963	PETERSON, GEORGE EARL	
	Examiner	Art Unit	
	Shih-Chao Chen	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 August 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *2 and 12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-11,15-21 and 23-25* is/are rejected.

7)☒ Claim(s) *3,4,13,14 and 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 July 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 5-11, 15-21 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wicks et al. (US H2016 H)in view of Ogot et al. (U.S. Patent No. 5,648,787), and further in view of Kraus (J.D. Kraus, "Antenna", 2nd ED., McGraw Hill, Inc., New York (1988), pp759-760).

Regarding claim 1, Wicks et al. teaches in figures 1-5 an antenna structure comprising: at least one antenna element (mono-blade antenna element), that at least one antenna element having at least one taper (See Figures 4-5); and a ground plane (ground plane) coupled with the at least one antenna element (mono-blade antenna element).

Regarding claim 5, Wicks et al. teaches in figures 1-5 the antenna structure wherein the at least one antenna element (mono-blade antenna element) is positioned at an angle from the ground plane (ground plane).

Regarding claim 6, Wicks et al. teaches in figures 1-5 the antenna structure wherein the angle is about 90 degrees with respect to the x-, y- and z-axes (See Figure 4).

Regarding claim 7, Wicks et al. teaches in figures 1-5 the antenna structure wherein the at least one antenna element (mono-blade antenna element) is coupled with the ground plane (ground plane) by means of an unbalanced impedance (coaxial transmission line feed).

Regarding claim 8, Wicks et al. teaches in figures 1-5 the antenna structure wherein the unbalanced impedance (coaxial transmission line feed) comprises a coaxial cable.

Regarding claim 9, Wicks et al. teaches in figures 1-5 the antenna structure wherein a first conductor of the unbalanced impedance (See Figure 4) mechanically couples the at least one antenna element (mono-blade antenna element) with the ground plane (ground plane).

Regarding claim 11, Wicks et al. teaches in figures 1-5 an antenna structure comprising: an array of at least two antenna elements (See Figure 5), each antenna element (mono-blade antenna element) having at least one taper;, a ground plane (ground plane); and an unbalanced impedance (coaxial transmission line feed) for coupling the array of at least two antenna elements with the ground plane (ground plane) (See col. 4, lines 7-13).

Regarding claim 15, Wicks et al. teaches in figures 1-5 the antenna structure wherein each antenna element (mono-blade antenna element) of the array is positioned at an angle from the ground plane (ground plane).

Regarding claim 16, Wicks et al. teaches in figures 1-5 the antenna structure wherein the angle for each antenna element is about 90 degrees with respect to the x-,

y- and z-axes (See Figure 4).

Regarding claim 17, Wicks et al. teaches in figures 1-5 the antenna structure wherein the unbalanced impedance (coaxial transmission line feed) comprises a coaxial cable.

Regarding claim 18, Wicks et al. teaches in figures 1-5 the antenna structure wherein a first conductor of the unbalanced impedance (See Figure 4) mechanically couples each antenna element of the array with the ground plane (ground plane).

Wicks et al. teaches every feature of the claimed invention above except for the symmetrical finite ground plane; and symmetrical disk shaped finite ground plane.

Ogot et al. teaches in figure 3A the symmetrical disk shaped finite ground plane (210,250).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the metal ground plane as shown in Wicks et al. by using the symmetrical disk shaped finite ground plane as taught by Ogot et al. in order to maximize the surface area of the ground plane perpendicular to the transmission element, and provides a uniform transmission pattern (See col. 4, lines 66-67 and col. 5, lines 1-3).

Wicks et al. and Ogot et al. teach every feature of the claimed invention except for the at least one antenna element comprises a traveling wave antenna supporting a phase velocity greater than the speed of light; and a slow wave antenna to widen the directivity of the antenna structure.

Kraus teaches in figures 16-41 & 16-42 the at least one antenna element (Leaky-wave antennas) comprises a traveling wave antenna supporting a phase velocity greater than the speed of light; and a slow wave antenna (Surface-wave antenna) to widen the directivity of the antenna structure.

In view of the above statement, it would have been obvious to one having ordinary skill in the art at the time the invention was made by using leaky-wave antenna or surface-wave antenna as taught by Kraus in order to have the structure carries a fast wave (v >c) or a slow wave (v <c) (See pp759-760).

Allowable Subject Matter

3. Claims 3-4,13-14 & 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

4. Applicant's arguments filed August 20, 2006 have been fully considered but they are not persuasive.

5. Applicant argues that "Without a clear indication of such motivation, the Examiner's statement is merely an unsupported conclusion. It is, moreover, clearly an impermissible use of hindsight and Applicant's own teaching.". This argument is not deemed to be persuasive because (1). Kraus teaches on page 759-760, surface-wave antenna take many forms. They are traveling-wave antennas carrying a bound wave with the energy flowing above the guiding surface and with velocity v<c (slow wave); and leaky-wave antennas are also traveling-wave types but ones in which radiating

energy leaks continuously or periodically from along the length of the guiding structure, with most of the energy flow within the structure. Typically, but not necessarily, the structure carries a fast wave (v>c). (2). In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shih-Chao Chen whose telephone number is (571) 272-1819. The examiner can normally be reached on Monday-Thursday from 7 AM to 5:30 PM, Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy P. Callahan can be reached on (571) 272-1740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Shih-Chao Chen
Primary Examiner
Art Unit 2821

SHIH-CHAO CHEN
PRIMARY EXAMINER

SXC
October 31, 2006